

REMARKS

This letter is responsive to Office Actions issued April 11, 2008 and May 13, 2008. Three Office Actions were issued by the USPTO, to which a reply remained outstanding prior to the submission of the present response. Applicants intend through this response to fully respond to all objections and rejections raised. Applicants respectfully note the following:

1. A first Office Action mailed October 6, 2006 issued in respect of this case, in which the USPTO relied upon the Freeman reference in issuing claim rejections under 35 U.S.C. §102. The USPTO stated that all the claimed features were disclosed in Freeman, and cited "column 2 lines 54-67 and column 3 lines 1-67 and column 4 lines 49-67 and column 5-18 lines 1-67" in support of this proposition. The referenced passages essentially amounted to the whole of the Freeman document. The Applicants filed a reply dated January 8, 2007, which noted that the amended claims explicitly recited a number of distinguishing features that are neither disclosed nor suggested in Freeman.
2. A second and Final Office Action, mailed April 9, 2007, was subsequently issued in the application. In response to the Applicants' submissions that specific features were not disclosed in Freeman, the Examiner provided a general response stating: "The Examiner disagrees with Applicant's because the limitation were addressed as stated... Therefore it is inherently clear that Applicant's claimed limitations are addressed within the teachings of Freeman." No specific passages of the Freeman document were relied upon to support the Examiner's final rejection other than "column 2 lines 54-67 and column 3 lines 1-67 and column 4 lines 49-67 and column 5-18 lines 1-67", which, as noted above, essentially amount to the whole Freeman document. A response to the Final Office Action was filed on July 6, 2007, that identified at least four claimed features not disclosed in the Freeman reference. The Response also noted that the Final Office Action merely provided, a further omnibus rejection of the claims, which was not informative to the Applicants.

3. An Advisory Action mailed August 15, 2007, indicated that the "Applicant's arguments has been fully considered but they are not persuasive (see prior office action)".

4. In an attempt to resolve the outstanding issues at the prosecution stage, the Applicants opted to file a Request for Continued Examination. An Office Action mailed January 10, 2008 was issued. In addition to the introduction of new rejections under 35 U.S.C. § 101 and 35 U.S.C. § 112 not previously raised by the Examiner, the rejections under 35 U.S.C. § 102 were maintained in the Office Action. However, the referenced passages of Freeman were now provided as "paragraphs 0073, 0077, 0082, 0094-0097, 0121-229, 0240, 0274-0280, 0364" with respect to all claim elements. The Applicants noted that the Office Action failed to identify specific passages for each claim element, and that the Freeman document lacked paragraph numbers and contained less than approximately 120 paragraphs of description. The paragraph references cited were in error, as many of the cited paragraphs do not exist in Freeman at applicants request, due to this numerous errors in the January 10, 2008 action.

5. A substitute action was mailed April 11, 2008, thus replacing the January 10, 2008 action. In the substitute action, it was conceded that "the Office Action mailed January 8, 2008 [sic] has been missing parts that made the Office Action not complete in a manner to able the applicant respond to it. Hereby the Office Action mailed on January 8, 2008 has been vacated. This Office Action is replacing the previous office action and the new time has been set."

6. On May 13, 2008, a further non-final Office Action was mailed by the Examiner, which appears to be a duplicate copy of the Office Action initially mailed on January 10, 2008.

In view of the foregoing, it would appear that the intention of the substitute action mailed April 11, 2008 was to vacate the Office Action mailed on January 10, 2008. We agree with the Examiner that the Office Action mailed on January

10, 2008 was missing parts that made the Office Action not complete in a manner that would allow the Applicants to respond. For the same reasons, it is respectfully submitted that the Office Action mailed on May 13, 2008 is also incomplete, and we assume that this was re-issued in error. The Examiner is respectfully requested to vacate the Office Action dated May 13, 2008.

Accordingly, this amendment addresses the rejections in the Office Action dated April 11, 2008. Claims 1 to 16 are currently pending in the application.

1. Rejections of Claims 1, 12, and 16 under 35 U.S.C. § 101

In the Office Action the Examiner rejects claims 1, 12 and 16 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Specifically, the Examiner is of the view that certain recited steps are mere ideas in the abstract, and that the claims are non-statutory as they do not produce a useful, concrete and tangible result. The Applicants respectfully disagree and traverse the rejections.

First, it is noted that these claims are directed to a no-arbitrage based **system** for valuing one or more credit instruments. The claims are not directed to steps of an algorithm, *per se*, but to a computer-implemented system that comprises a set of integrated components (e.g. engines) in modular form (see e.g. paragraph [0032] of the Applicant's application as published) configured to perform specific functions, which are directly or indirectly connected to a database, which is a physical component. Applicants respectfully submit that the claimed systems do not define abstract ideas without a practical application. By way of example, the claimed no-arbitrage system may support valuation functions and risk management functions, and the risk and reward metrics computed may support decision-making (see e.g. paragraphs [0036] and [0042] of the Applicants' published application).

However, to expedite prosecution of the application, the independent claims clarify that the database has a machine readable storage medium and

that acts performed by the claimed engines and report generator are executable by a processor on a computer.

For at least these reasons, Applicants respectfully submit that claims 1, 12, and 16 are directed to statutory subject matter. Withdrawal of the rejection under 35 U.S.C. § 101 is respectfully requested.

2. Rejections of Claims 1, 12, and 16 under 35 U.S.C. § 112

In the Office Action the Examiner rejects claims 1, 12, and 16 under 35 U.S.C. § 112 second paragraph as being indefinite. The Applicants respectfully disagree and traverse the rejections.

Claims 1, 12, and 16 recite the term "a second pricing engine", and in the Office Action the Examiner asks where the "first" is. Claims 1, 12 and 16 recite a no-arbitrage-based system that comprises, among other components, "a first calibration engine", "a second pricing engine", "a third engine... for performing simulation-based computation", and "a fourth risk engine... for computing a plurality of risk and reward metrics". Ordinal reference language is recited in the claims to distinguish between the multiple engines. Persons of ordinary skill in the art will clearly understand that different engines configured to perform different functions are recited in the claims, rather than multiple instances of the same type of engine. Accordingly, it is respectfully submitted that it will be understood that the "first" engine is the "first calibration engine" as recited in the claims.

The Examiner was of the view that claims 1, 12, and 16 recite the term "basis instruments", and that this causes the scope of the claim to be unclear. The Applicants note that the term "basis instruments" is not recited in claims 1 or 12. However, the term does appear in claims 5 and 16. It is respectfully submitted that the term "basis instrument" is one that is well-known in the art, and would clearly be understood by the skilled person with knowledge of finance. Paragraph [0256] of the Applicants' published application further clarifies that "a

basis instrument may represent an actual financial product or an abstract instrument".

The Examiner was of the view that the scope of the claim is unclear how the calibration parameters are being used within the claim. Claims 1, 12 and 16 have been amended to clarify that the calibration parameters are used by the pricing engine (see e.g. paragraph [0136] of the Applicants' published application).

Withdrawal of the rejections under 35 U.S.C. § 112 is respectfully requested.

3. Rejections of Claims 1-16 under 35 U.S.C. § 103

Claims 1 to 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0052836 ("Galperin") in view of U.S. Patent 7,171,385 ("Dembo"). The Applicants respectfully traverse all rejections.

Independent claims 1, 12 and 16 recite a number of distinguishing features, which are neither taught nor suggested in either Galperin or Dembo. These include, for example:

a calibration engine that generates calibration parameters from credit instrument data and current market data;

a pricing engine that values said one or more credit instruments according to no-arbitrage financial principles;

a pricing engine that calculates, for each credit instrument, at least one of a net present value and a par-spread for the credit instrument using current market data; and

a risk engine for computing a plurality of risk and reward metrics from valuation and exposure measures generated by a third engine for performing simulation-based computations.

The cited documents fail to disclose a calibration engine that generates calibration parameters from credit instrument data and current market data

In the Office Action, the Examiner was of the view that Galperin discloses a first calibration engine that generates calibration parameters from credit instrument data and current market data at paragraphs [0002], [0025], [0037], [0054], and [0066]. The Applicants respectfully disagree. In particular, Galperin neither teaches nor suggests the use of a calibration engine that uses current market data.

Galperin at paragraph [0002] describes a method and apparatus for assessing the propensity of the borrower to prepay an instrument in question that determines a prepayment score to enable assessment of the values of various instruments such as mortgages, loans, etc. Paragraph [0025] generally describes the virtues of measuring prepayment risk. Paragraph [0037] generally describes calculating the prepayment score using prepayment historical data 62 and interest rate scenarios. Paragraph [0054] generally describes the impact of rewards on consumer prepayment behavior. Finally, paragraph [0066] generally describes data-mining techniques that can be used to analyze the value of financial instruments using the prepayment scores. These teachings do not mention calibration, let alone calibration using current market data. Persons skilled in the art will understand that the claimed calibration engine, by using current market data, is employed to calibrate certain input parameters to current market levels. The prepayment scores described in Galperin are, as noted in paragraph [0037] identified by the Examiner, calculated using historical data and (e.g. future interest rate) scenarios, not current market data. Accordingly, Galperin teaches away from the Applicants' claimed embodiments.

The cited documents fail to disclose a pricing engine that values said one or more credit instruments according to no-arbitrage financial principles

In the Office Action, the Examiner was of the view that Galperin discloses a second pricing engine that values credit instruments according to no-arbitrage financial principles at paragraphs [0019] and [0055] to [0056]. The Applicants respectfully disagree. In particular, Galperin neither teaches nor suggests a method or system for the valuation of credit instruments, and furthermore, Galperin neither teaches nor suggests a system for valuing credit instruments according to no-arbitrage financial principles. It is respectfully submitted that the term *no-arbitrage* has a meaning that is well known in the art.

By way of background, the Applicants' claimed systems generally address the issue of pricing and **valuation** of complex credit instruments, such as loans, using a systematic process. Embodiments of the Applicants' system facilitate the determination of a value (i.e., a price) for one or more credit instruments, such as loans for example, using current market data.

It can be observed that the Applicants' claimed pricing engine **values** the credit instruments. As one of ordinary skill in the field would understand, even a high-risk loan may have a substantial value, if the rate of return is high enough, for example.

Furthermore, the Applicants' claimed pricing engine values the credit instruments according to **no-arbitrage financial principles**. In no-arbitrage based systems (which Galperin is not), the calculated values of the credit instruments (e.g. loans) will be consistent with the values of other traded instruments in the market (e.g. bonds, credit derivatives); hence such systems may be referred to as "no-arbitrage" based systems.

Galperin neither teaches nor suggests a system that determines the **value** of a credit instrument. As Galperin fails to teach how the valuation of such

instruments may be determined, it follows that Galperin also fails to teach valuation according to **no-arbitrage financial principles**, as claimed.

Galperin describes a method and apparatus for determining a prepayment score of an individual borrower to develop a prepayment model to enable the assessment of the values of various instruments such as mortgages, loans etc. (see e.g. paragraphs [0002] to [0005]). However, the focus of Galperin is on how such a prepayment score may be determined, and not the potential subsequent use of the prepayment score to value instruments.

It is noted that Figure 3A and the corresponding description (see e.g. paragraphs [0135] and [0143]) of the Applicants' published application illustrate this distinction by showing a "Prepayment Model" being used as but one type of input for the overall valuation of credit instruments performed by the Applicants' pricing engine. Accordingly, it would be understood that the Applicants' system might potential employ Galperin's prepayment model as one input used for valuing credit instruments, or some other prepayment model. However, it is clear that Galperin is not directed to a system for the subsequent **valuation** of instruments.

Moreover, not only does Galperin fail to teach how instruments are to be valued, but Galperin also fails to teach valuation specifically according to no-arbitrage financial principles. Paragraph [0019] of Galperin generally describes the efficiency of direct marketing efforts of lenders. Paragraphs [0055] and [0056] generally describe combining the prepayment score with additional data and providing it to a pricing engine in order to price a loan. However, as noted above, Galperin does not proceed to teach or suggest how the pricing or valuation of the loan might be achieved, and makes no mention of performing such valuation in accordance with no-arbitrage financial principles.

The cited documents fail to teach a pricing engine that calculates, for each credit instrument, at least one of a net present value and a par-spread for the credit instrument using current market data

In the Office Action, the Examiner was of the view that Galperin discloses calculating at least one of a net present value and a par-spread for credit instruments using current market data, at paragraph [0019] and paragraphs [0055] to [0056]. The Applicants respectfully disagree. As noted above, Galperin neither teaches nor suggests a method or system for valuing credit instruments, and in particular, Galperin does not disclose the specific approach employed by the claimed embodiments.

For greater certainty, unlike the systems disclosed in the cited documents, one result produced by the specific embodiments of the Applicants' claimed systems is either a price (value) for a credit instrument (e.g. a loan) or a par-spread rate.

The amended claims do not preempt all possible methodologies for valuing credit instruments. In respect of the embodiments defined in the amended claims, the pricing engine values credit instruments according to no-arbitrage financial principles, and more specifically, requires that at least one of a net present value and a par-spread for the credit instrument being valued be calculated using current market data. This specific technique is not disclosed in Galperin. In contrast, Galperin does not use current market data, even to generate its prepayment scores.

The cited documents fail to teach a risk engine for computing a plurality of risk and reward metrics from valuation and exposure measures generated by an engine for performing simulation-based computations

In the Office Action, the Examiner was of the view that Galperin discloses a risk engine for computing a plurality of risk and reward metrics at paragraph [0054]. The Applicants respectfully disagree.

Paragraph [0054] generally describes the impact of rewards on consumer prepayment behavior, and provides an example of rewarding a consumer for not prepaying a loan. Galperin describes the reward as being an incentive for a consumer to exhibit specific behavior, i.e. not prepaying. However, Galperin neither teaches nor suggests a risk engine for computing risk and reward metrics from the valuation and exposure measures generated by an engine for performing simulation-based computations. For example, claimed risk and reward metrics may relate to the risk and reward associated with a credit instrument provider (e.g. a loan lender), which may be used to assess how profitable a given credit instrument will be for the provider. Applicants respectfully submit that Galperin does not teach the use of a risk engine configured to compute such metrics.

As the cited references fail to disclose all of the elements of independent claims 1, 12 and 16, it is respectfully submitted that this is evidence of non-obviousness in the Applicants' favor, as it is not possible to combine elements from the cited references to arrive at the subject matter of the Applicants' claims regardless of the extent of any motivation to combine.

The Examiner relies on an analysis to state how the teachings of Galperin may be modified to arrive at the subject matter of the Applicants' amended claims. Because of the Examiner's chosen ground for rejection, the only pending ground for rejection is a "teaching, suggestion or motivation" analysis.

The Applicants respectfully submit that even after KSR Int'l v Teleflex Inc., No. 04-1350 (April 30, 2007), the following legal principles are still valid: (1) the USPTO still has the burden of proof on the issue of obviousness; (2) the USPTO must base its decision upon evidence, and it must support its decision with articulated reasoning (slip op. at 14); (3) merely demonstrating that all elements

of the claimed invention exist in the prior art is not sufficient to support a determination of obviousness (slip op. at 14-15); (4) hindsight has no place in an obviousness analysis (slip op. at 17); and (5) the Applicants are entitled to a careful, thorough, professional examination of the claims (slip op. at 7, 23, in which the Supreme Court remarked that a poor examination reflected poorly upon the USPTO).

For at least the foregoing reasons, Applicants respectfully submit that claims 1, 12 and 16 are both novel and non-obvious in view of the cited references. It is further respectfully submitted that the remaining claims which are dependent on at least one of the independent claims also define patentable subject matter for at least the same reasons. Withdrawal of the rejections under 35 U.S.C. 103 is respectfully requested.

The Applicants note that the claimed features discussed in the present reply are examples only. There may exist other features recited in the Applicants' claims that are also not disclosed in Galperin or other references, and the Applicants reserve the right to address rejections in respect of these other features in a future reply. For example, claims 5 and 16 further defines a specific implementation of the claimed calibration engine in respect of particular embodiments. Many of the claimed features are not disclosed in Galperin, which would not be surprising to the skilled person since there is no logical place for them in deriving prepayment scores.

In view of the foregoing, it is submitted that each of claims 1-16 is in form for allowance, and a notice to that effect is respectfully requested. Should there be any remaining issues after this amendment, the Examiner is kindly invited to call the undersigned and arrange for a telephone interview with the Applicants to expedite prosecution of the application.

The Assistant Commissioner for Patents is hereby authorized to charge any additional fees or credit any excess payment that may be associated with this communication to deposit account **04-1679**.

Respectfully submitted,

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John M. Vereb
John M. Vereb, Reg. No.: 48,912
Attorney For Applicants

DUANE MORRIS LLP
1540 Broadway
New York, New York 10036
(212) 692-1048 (Telephone)
(212) 692-1020 (Fax)